

Application No.: 09/661,653

REMARKS/ARGUMENTS

The Office Action mailed October 2, 2002 in the parent application has been carefully reviewed. Consideration of this RCE Application, as amended, and in view of the following remarks, is respectfully requested. Claims 1 – 9 are present for consideration.

The 35 USC § 103 Claim Rejections in the Parent Application

Claims 1-9 in the parent application were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Kocher et al in view of Scheps.

Applicants Response to the 35 USC § 103 Claim Rejections

Applicant has amended all of the independent claims and some of the dependent claims in the subject application. Applicant respectfully traverses the rejection of claims 1-9 under 35 U.S.C. §103. The cited references do not teach the claimed combination. There is no suggestion in the references to form a proper combination. Under MPEP §2142, there are three requirements to establish a *prima facie* case of obviousness.

(1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings.

(2) There must be a reasonable expectation of success.

(3) The prior art reference (or references when combined) must teach or suggest all the claim limitations.

The Kocher et al reference does not disclose the following claim elements and steps:

(Amended Claim 1) "trivalent titanium ions dissolved in a liquid host within said lasing chamber" or "a semiconductor pumping device operatively connected to said lasing chamber for optically exciting said trivalent titanium ions dissolved in said liquid host within said lasing chamber, said semiconductor pumping device comprising at least one semiconductor diode for optically exciting said trivalent titanium ions dissolved in said liquid host within said lasing chamber."

(Amended Claim 2) "wherein said at least one semiconductor diode for optically exciting said trivalent titanium ions dissolved in said liquid host is operated in the near infrared at 800-900 nm causing said laser to produce a beam with tens of kilowatts of cw power with good beam quality" or "wherein said laser includes a circulation system for circulating said trivalent titanium ions dissolved in a liquid host into and out of said lasing chamber."

(Amended Claim 6) "filling said lasing chamber with lasing liquid containing trivalent titanium ions dissolved in a liquid host" or "optically exciting said lasing liquid in the 800 to 900 nm region with a semiconductor diode to provide a powerful laser beam" or "circulating said lasing liquid containing trivalent titanium ions dissolved in a liquid host into and out of said optical cavity and through a heat exchanger to cool said lasing liquid containing trivalent titanium ions dissolved in a liquid host."

(Amended Claim 9) "a lasing liquid containing trivalent titanium ions dissolved in a liquid host within said optical cavity" or "a semiconductor pumping device operatively connected to said optical cavity for optically exciting said trivalent titanium ions dissolved in a liquid host within said optical cavity, said semiconductor pumping device comprising at least one semiconductor diode for optically exciting said trivalent titanium ions in the 800 to 900 nm region" or "a circulation system that provides a closed loop for circulating said lasing liquid containing trivalent titanium ions dissolved in a liquid host into and out

of said optical cavity, said circulation system including a pump and a heat exchanger."

Applicant respectfully submits that the rejection fails under prong 1 of the obviousness test because there is no suggestion or motivation in the prior art to combine Kocher et al and Scheps. The fact that Scheps states:

"dopants used in the laser gain element as well as by the reflective coatings and transmission of the optical elements making up the resonator that defines the laser resonator cavity. As discussed above, some of the exemplary dopants that can be used in laser gain elements are Er.sup.3+, Ho.sup.3+, Nd.sup.3+, Cr.sup.3+, Ti.sup.3+ and Tm.sup.3+"

does not provide a teaching of combining Kocher et al and Scheps. There is no suggestion or motivation in the prior art to combine the references. Under MPEP §2143.01, "Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art." In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). It should be noted that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicant also respectfully submits that the rejection fails under prong 1 of the obviousness test because there is no suggestion or motivation in the prior

art to combine Kocher et al and Scheps because the Scheps reference teaches away from such a combination. The Scheps reference relies upon a prism and the Kocher et al reference circulates a liquid through the laser cavity and could not be a prism. "A factor cutting against a finding of motivation to combine or modify the prior art is when the prior art teaches away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the references would be discouraged from following the path set out in the reference or would be led in a direction divergent from the path the applicant took." In re Gurley, 27 F.3d 551, 31 U.S.P.Q.2d 1130 (Fed. Cir.1994).

Applicant respectfully submits that the rejection also fails under prong 2 of the obviousness test because there is no reasonable expectation of success. The Scheps reference relies upon a prism and the Kocher et al reference circulates a liquid through the laser cavity and is not be a prism; therefore, there is no reasonable expectation of success.

Applicant submits that the rejection also fails under prong 3 of the obviousness test because the combination does not show or suggest all of the claim elements. For example the following claim elements are not show or suggested: "a semiconductor pumping device operatively connected to said lasing chamber for optically exciting said trivalent titanium ions dissolved in said liquid host within said lasing chamber, said semiconductor pumping device

comprising at least one semiconductor diode for optically exciting said trivalent titanium ions dissolved in said liquid host within said lasing chamber" or "wherein said at least one semiconductor diode for optically exciting said trivalent titanium ions dissolved in said liquid host is operated in the near infrared at 800-900 nm causing said laser to produce a beam with tens of kilowatts of cw power with good beam quality" or "wherein said laser includes a circulation system for circulating said trivalent titanium ions dissolved in a liquid host into and out of said lasing chamber" or "filling said lasing chamber with lasing liquid containing trivalent titanium ions dissolved in a liquid host" or "optically exciting said lasing liquid in the 800 to 900 nm region with a semiconductor diode to provide a powerful laser beam" or "circulating said lasing liquid containing trivalent titanium ions dissolved in a liquid host into and out of said optical cavity and through a heat exchanger to cool said lasing liquid containing trivalent titanium ions dissolved in a liquid host" or "a semiconductor pumping device operatively connected to said optical cavity for optically exciting said trivalent titanium ions dissolved in a liquid host within said optical cavity, said semiconductor pumping device comprising at least one semiconductor diode for optically exciting said trivalent titanium ions in the 800 to 900 nm region" or "a circulation system that provides a closed loop for circulating said lasing liquid containing trivalent titanium ions dissolved in a

liquid host into and out of said optical cavity, said circulation system including a pump and a heat exchanger."

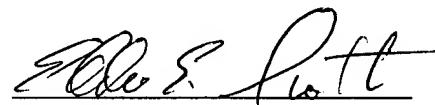
Applicant also submits that the rejection fails under both prongs 1 and 3 of the obviousness test because only through impermissible hindsight would motivation be found to combine the Kocher et al reference with the Scheps reference. MPEP §2142 states, "the tendency to resort to 'hindsight' based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." Under MPEP §2143.01, "the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." In re Mills, 916 F.2d 680, 16 USPQ2d 1430.

#### SUMMARY

The undersigned respectfully submits that, in view of the foregoing amendments and remarks, the rejections of the claims raised in the Office Action mailed October 2, 2002 in the parent application have been fully addressed and overcome. The present RCE Application is believed to be in condition for allowance. It is respectfully requested that this application be reconsidered, that claims 1 – 9 be allowed, and that this case be passed to issue. If it is believed that

a telephone conversation would expedite the prosecution of the present application, or clarify matters with regard to its allowance, the Examiner is invited to call the undersigned attorney at (925) 424-6897.

Respectfully submitted,



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Dated: January 13, 2003  
Livermore, California

Application No.: 09/661,653

VERSION WITH MARKINGS TO SHOW CHANGES MADE  
IN THE CLAIMS

Please substitute the following amend versions of claims 1,2, 6, and 9.

1. (Amended) A laser, comprising:  
a lasing chamber,  
[a semiconductor pumping device within said lasing chamber, and]  
trivalent titanium ions dissolved in a liquid host within said lasing  
chamber, and  
a semiconductor pumping device operatively connected to said lasing  
chamber for optically exciting said trivalent titanium ions dissolved in said  
liquid host within said lasing chamber, said semiconductor pumping device  
comprising at least one semiconductor diode for optically exciting said trivalent  
titanium ions dissolved in said liquid host within said lasing chamber.
2. (Amended) The laser of claim 1 wherein said at least one semiconductor  
diode for optically exciting said trivalent titanium ions dissolved in said liquid  
host is operated in the near infrared at 800-900 nm causing said laser to produce  
a beam with tens of kilowatts of cw power with good beam quality, and wherein  
said laser [including] includes a circulation system for circulating said trivalent  
titanium ions dissolved in a liquid host into and out of said lasing chamber.
6. (Amended) A laser method comprising:  
providing a lasing chamber,  
filling said lasing chamber with lasing liquid containing trivalent titanium  
ions dissolved in a liquid host, [and]

optically exciting said lasing liquid in the 800 to 900 nm region with a semiconductor diode [by a semiconductor pumping device] to provide a powerful laser beam, and

circulating said lasing liquid containing trivalent titanium ions dissolved in a liquid host into and out of said optical cavity and through a heat exchanger to cool said lasing liquid containing trivalent titanium ions dissolved in a liquid host

9. (Amended) A laser system, comprising:  
an optical cavity,  
[a diode pumping device within said optical cavity,]  
a lasing liquid containing trivalent titanium ions dissolved in a liquid host within said optical cavity,

a semiconductor pumping device operatively connected to said optical cavity for optically exciting said trivalent titanium ions dissolved in a liquid host within said optical cavity, said semiconductor pumping device comprising at least one semiconductor diode for optically exciting said trivalent titanium ions in the 800 to 900 nm region, and

a circulation system that provides a closed loop for circulating said lasing liquid containing trivalent titanium ions dissolved in a liquid host into and out of said optical cavity, said circulation system including a pump and a heat exchanger.